

REMARKS

By the present Amendment, editorial revisions have been made in the specification in order to set forth sections of the application that are more in line with the arrangement suggested in MPEP §608.01(a). The claims, however, have not been revised since applicants respectfully maintain that the presently claimed invention is patentable over the cited prior art for the reasons which follow.

As explained in greater detail in the specification, one aspect of the present invention provides a one component resin composition curable with a combination of light and heat. The composition comprises several defined components, particularly an epoxy resin (1), an acrylic ester monomer and/or methacrylic ester monomer, or an oligomer thereof (2), a latent epoxy curing agent (3), a photo radical initiator (4), and a compound having two or more thiol groups per molecule (5), wherein the ingredient (5) is contained in an amount of 0.001 to 5.0 parts by weight per 100 parts by weight of the resin composition.

In considering the present invention, it is important to recognize that the compound having two or more thiol groups per molecule is independent from the latent epoxy curing agent. The curing agent is discussed in the specification starting at the page 13, while the compound having two or more thiol groups per molecule is described in the passage beginning at page 16, line 9. This understanding is supplemented by the Examples and Comparative Examples starting on page 55 of the specification and the information provided in Table 1 on pages 57-58 and Table 2 on page 60. In this regard, it will be noted from illustrative Example 1 and Comparative Example 1 that when the compound having two or more thiol groups per molecule is omitted, the high-temperature and high-humidity adhesion reliability,

and the display characteristics of a liquid crystal display panel are inferior relative to the results that can be attained in accordance with the present invention.

The documents cited by the Examiner namely Miyawaki et al., U.S. Patent Application Publication No. 2006/0009579, Irving et al., U.S. Patent No. 4,836,878, and Slocki et al., U.S. Patent No. 4,383,090, do not individually disclose or collectively teach the present claimed invention and certainly do not recognize the advantages which can be obtained in accordance with the present invention.

Applicants initially note that Miyawaki et al. does not actually constitute "prior art" against the present application. Miyawaki et al. was published on January 12, 2006, which is after the PCT filing date of the present application of November 25, 2004. Miyawaki et al. does not have a "prior art" date under 35 U.S.C. §102(e) as the document is based on a PCT application filed on September 19, 2003, and published in Japanese. This understanding can be obtained from a copy of the front page of the published PCT application (WO 2004/027502). For international applications filed after November 29, 2000, the international application has to be published in English in order to have any "prior art" date under 35 U.S.C. §102(e), as can be understood from the discussion provided in MPEP §706.02(f)(1), particularly Example 5 thereof.

Even assuming that the Examiner can find a document with corresponding disclosure that properly constitutes "prior art", the Examiner has recognized that Miyawaki et al. does not disclose the claimed compound having two or more thiol groups per molecule. The Examiner has attempted to bridge this deficiency by relying on Irving et al. and Slocki et al. with the former being cited to show a polymericthiol curing agent in an amount of from 0.1 percent to 33 percent by

weight and the later being relied on to teach that a polymercaptan can be used to quicken the cure rate of mixtures of polyepoxide resins and polyacrylate esters.

Applicants again note that the compound having two or more thiol groups per molecule is not added to the present invention to function as a curing agent. This is apparent from the fact that the latent epoxy curing agent is separately recited and the amount of the compound having two or more thiol groups per molecule is smaller than the amount typically present as a curing agent. In this respect, it is believed that the compound functions as a chain transfer agent in the photoradical reaction. This understanding enables the compound to enhance the storage stability of the composition and the strength of the cured product, but does not affect the cure rate at lower temperatures.

If one were to attempt to combine the respective teachings of the cited documents, one would at best seek to replace the latent epoxy curing agents of Miyawaki et al. with those of Irving et al. and Slocki et al. However, this would not result in the presently claimed invention which recites the presence of a latent epoxy curing agent and a compound having two or more thiol groups per molecule with the later being provided in an amount of 0.001 to 5 parts by weight per 100 parts by weight of the resin composition. In this latter respect, it will be noted from Example 1 in paragraph [0130] and Table 1 on page 11 of Miyawaki et al. that each of the Examples uses 7 parts by weight of the latent epoxy curing agent. In addition, none of the cited documents in anyway recognizes substantial advantages which can be obtained in accordance with the present invention when the compound having two or more thiol groups per molecule is present in the defined amount relative to a resin composition which contains the same components, but without the compound having


two or more thiol groups per molecule. Such information cannot be ignored in considering the patentability of the presently claimed invention.

In view of the foregoing discussion and the evidence of record, applicants respectfully submit that the claims under consideration are patentable over the cited documents, even assuming that the Examiner can find a prior art document with corresponding disclosure to Miyawaki et al. In view of this conclusion, while applicants acknowledge and confirm the election in response to the unity of invention requirement noted in the Official Action, applicants respectfully request that the claims relating to the non-elected subject matter be rejoined and allowed with the present application. In this respect, it will be noted that each of the claims Groups II and III depend directly or indirectly from sole independent claim 1.

Should the Examiner wish to discuss any aspect of the present application, he is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

By: 
Robert G. Mukai
Registration No. 28531

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620

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(71) 出願人 (米国を除く全ての指定国について): 三井化学株式会社 (MITSUI CHEMICALS, INC.) [JP/JP]; 〒105-7117 東京都港区東新橋一丁目5番2号 Tokyo (JP)

(72) 発明者; および

(75) 発明者/出願人 (米国についてのみ): 宮脇 孝久 (MIYAWAKI, Takahisa) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 水田 康司 (MIZUTA, Yasushi) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 竹内 文人 (TAKEUCHI, Fumito) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 伊藤 健司 (ITOU, Kenji) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 北村 正 (KITA-MURA, Tadashi) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 朝倉 弘幸 (ASAKURA, Hiroyuki) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内

Chiba (JP). 八城 賢一 (YASHIRO, Kenichi) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP). 永田 桂 (NAGATA, Kei) [JP/JP]; 〒299-0265 千葉県袖ヶ浦市長浦5 8 0-3 2 三井化学株式会社内 Chiba (JP).

(74) 代理人: 鈴木 俊一郎 (SUZUKI, Shunichiro); 〒141-0031 東京都品川区西五反田七丁目1 3 番 6 号 五反田山崎ビル 6 階 鈴木国際特許事務所 Tokyo (JP)

(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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— 国際調査報告書

2 文字コード及び他の略語については、定期発行される各 PCT ガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

(54) Title: SEALING COMPOSITION FOR LIQUID CRYSTAL DISPLAYS AND PROCESS FOR PRODUCTION OF LIQUID CRYSTAL DISPLAY PANELS

(54) 発明の名称: 液晶シール剤組成物及びそれを用いた液晶表示パネルの製造方法

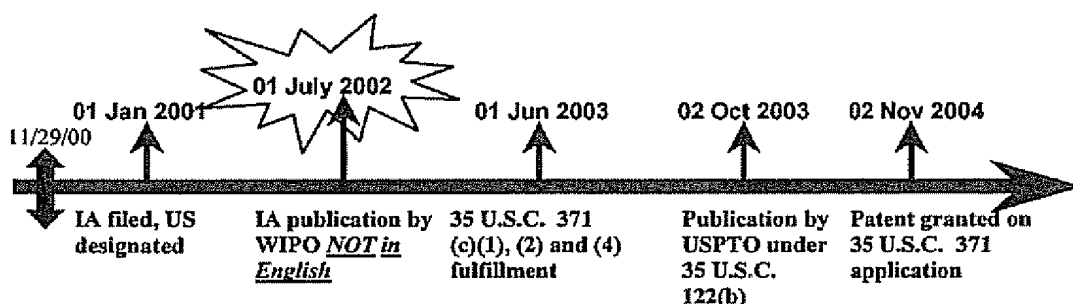
(57) Abstract: The sealing composition for liquid crystal displays according to the invention is characterized by consisting of a one-pack type photo- and thermo-setting resin composition comprising (1) a solid epoxy resin having a softening point of 40°C or above as determined by ring and ball method, (2) an acrylate ester monomer and/or a methacrylate ester monomer or an oligomer thereof, (3) a thermoplastic polymer obtained by copolymerizing an acrylate ester monomer and/or a methacrylate ester monomer with a monomer copolymerizable therewith and having a softening point of 50 to 120°C as determined by ring and ball method, (4) a photoradical polymerization initiator, and (5) a latent epoxy curing agent. The photo- and thermo-setting sealing composition for liquid crystal displays is applicable to the dispenser method, can give a cured product having excellent characteristics through photosetting in the first step, and permits the formation of stable cell gaps. Further, the sealing composition is inhibited from polluting liquid crystal in thermosetting in the second step and attains excellent setting properties in the shaded areas and high adhesion reliability.

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Example 5: References based on the national stage (35 U.S.C. 371) of an International Application filed on or after November 29, 2000 and which was not published in English under PCT Article 21(2).

All references, whether the WIPO publication, the U.S. patent application publication or the U.S. patent, of an international application (IA) that was filed on or after November 29, 2000 but was **not** published in **English** under PCT Article 21(2) have no 35 U.S.C. 102(e) prior art date at all. According to 35 U.S.C. 102(e), no benefit of the international filing date (nor any U.S. filing dates prior to the IA) is given for 35 U.S.C. 102(e) prior art purposes if the IA was published under PCT Article 21(2) in a language other than English, regardless of whether the international application entered the national stage. Such references may be applied under 35 U.S.C. 102(a) or (b) as of their publication dates, but never under 35 U.S.C. 102(e).



The 35 U.S.C. 102(e)(1) date for the IA Publication by WIPO is: None.

The 35 U.S.C. 102(e)(1) date for the Publication by USPTO is: None.

The 35 U.S.C. 102(e)(2) date for the Patent is: None.

The IA publication by WIPO can be applied under 35 U.S.C. 102(a) or (b) as of its publication date (01 July 2002).

Additional *Benefit Claims:

If the IA properly claimed ****>the benefit of<** to any earlier-filed U.S. application (whether provisional or non-provisional), there would still be no 35 U.S.C. 102(e) date for all the references.

If a later-filed U.S. nonprovisional (35 U.S.C. 111(a)) application claimed the benefit of the IA in the example above, the 35 U.S.C. 102(e) date of the patent or publication of the later-filed U.S. application would be the actual filing date of the later-filed U.S. application.